

levels, each adjacent two levels of which are separated by a second amount that is less than the first amount;

- a DC offset generator operable to add a DC offset to the 2-level mapped signal to produce a 2-level VSB modulated signal including a carrier produced by the DC offset, and add the DC offset to the 8-level mapped signal to produce an 8-level VSB modulated signal including the carrier produced by the DC offset; wherein the DC offset added to the 2-level mapped signal and the DC offset added to the 8-level mapped signal are the same in amount of DC offset; and

- a transmitter operable to transmit the 2-level VSB modulated signal and the 8-level VSB modulated signal;

said receiving apparatus comprising:

- a demodulator operable to demodulate the 2-level VSB modulated signal and the 8-level VSB modulated signal to the first data stream and the second data stream, respectively.

32. A signal transmission apparatus comprising:

- a mapper operable to map a first data stream to a 2-level mapped signal having two levels separated by a first amount, and to map a second data stream to an 8-level mapped signal having eight levels, each adjacent two levels of which are separated by a second amount that is less than the first amount;

- a DC offset generator operable to add a DC offset to the 2-level mapped signal to produce a 2-level VSB modulated signal including a carrier produced by the DC offset, and add the DC offset to the 8-level mapped signal to produce an 8-level VSB modulated signal including the carrier produced by the DC offset, wherein the DC offset added to the 2-level mapped signal and the DC offset added to the 8-level mapped signal are the same in amount of DC offset; and

- a transmitter operable to transmit the 2-level VSB modulated signal and the 8-level VSB modulated signal.

Draft

33. A signal receiving apparatus comprising:

- a receiver operable to receive a 2-level VSB modulated signal, having information of a first data stream, and an 8-level VSB modulated signal, having information of a second data stream, wherein the 2-level VSB modulated signal has two levels separated by a first amount and includes a carrier produced by a DC offset, the 8-level VSB modulated signal has eight levels, each adjacent two levels of which are separated by a second amount that is less than the first amount, and includes the carrier produced by the DC offset, and the DC offset from which the carrier is produced in the 2-level VSB modulated signal and the DC offset from which the carrier is produced in the 8-level VSB modulated signal are the same in amount of DC offset; and

- a demodulator operable to demodulate the 2-level VSB modulated signal to the first data stream and the 8-level VSB modulated signal to the second data stream.

34. A signal receiving apparatus according to claim 33, wherein said demodulator is operable to demodulate the 2-level VSB modulated signal and the 8-level VSB modulated signal by using the carrier.

35. A signal receiving apparatus according to claim 34, wherein said demodulator includes a carrier reproducer operable to reproduce the carrier according to a portion of the carrier passed through by the DC offset.

36. A signal transmission and receiving method comprising a transmission method and a receiving method,

said transmission method comprising:

- mapping a first data stream to a 2-level mapped signal having two levels separated by a first amount, and mapping a second data stream to an 8-level mapped signal having eight levels, each adjacent two levels of which are separated by a second amount that is less than the first amount;

- adding a DC offset to the 2-level mapped signal to produce a 2-level VSB modulated signal including a carrier produced by the DC offset, and adding the DC offset to the 8-level mapped signal

*D
Cortex*

to produce an 8-level VSB modulated signal including the carrier produced by the DC offset, wherein the DC offset added to the 2-level mapped signal and the DC offset added to the 8-level mapped signal are the same in amount of DC offset; and

- transmitting the 2-level VSB modulated signal and the 8-level VSB modulated signal; said receiving method comprising:

- demodulating the 2-level VSB modulated signal and the 8-level VSB modulated signal to the first data stream and the second data stream, respectively.

37. A signal transmission method comprising:

- mapping a first data stream to a 2-level mapped signal having two levels separated by a first amount, and mapping a second data stream to an 8-level mapped signal having eight levels, each adjacent two levels of which are separated by a second amount that is less than the first amount;

- adding a DC offset to the 2-level mapped signal to produce a 2-level VSB modulated signal including a carrier produced by the DC offset, and adding the DC offset to the 8-level mapped signal to produce an 8-level VSB modulated signal including the carrier produced by the DC offset, wherein the DC offset added to the 2-level mapped signal and the DC offset added to the 8-level mapped signal are the same in amount of DC offset; and

- transmitting the 2-level VSB modulated signal and the 8-level VSB modulated signals.

38. A signal receiving method comprising:

- receiving a 2-level VSB modulated signal, having information of a first data stream, and an 8-level VSB modulated signal, having information of a second data stream, wherein the 2-level VSB modulated signal has two levels separated by a first amount and includes a carrier produced by a DC offset, the 8-level VSB modulated signal has eight levels, each adjacent two levels of which are separated by a second amount that is less than the first amount, and includes the carrier produced by the DC offset, and the DC offset from which the carrier is produced in the 2-level VSB modulated signal and the DC offset from which the carrier is produced in the 8-level VSB modulated signal are the same in amount of DC offset; and

- demodulating the 2-level VSB modulated signal to the first data stream and the 8-level VSB modulated signal to the second data stream.

D1
CPK

39. A signal receiving method according to claim 38, wherein said demodulating comprises demodulating the 2-level VSB modulated signal and the 8-level VSB modulated signal by using the carrier.